

coloration he gives is that of *H. bitæniata*, Cox, also from South Australia, and persists in regarding the normal state of *H. angasiana* as "solid, white, and porcellaneous," and furthermore gives "*H. angasiana*, not Pfeiffer," as synonym of *H. bitæniata*, Cox, in his 'Monograph.' The coloration of *H. angasiana*, when fresh, is singularly like that of *H. bitæniata*, although the form and characters of the two species are extremely different. I have therefore given a figure of both the species on the accompanying plate, which ought to set the matter definitively at rest. I may add that *H. bitæniata*, Cox (1868), is a synonym of *H. flindersi*, A. Ad. & Ang., (P. Z. S. 1863), the description of which was unfortunately also taken from a bleached specimen from which the bands had disappeared.

The shell described and figured as *H. angasiana* by Dr. Newcomb in the 'Annals of the Lyceum of Natural History of New York,' in May 1860, must stand as *H. bougainvillei*, it having been described and figured under the latter name by Dr. Pfeiffer in the 'Proceedings' of this Society in February 1860 (see P. Z. S. 1860, p. 133).

EXPLANATION OF PLATE XX.

Figs. 1-5. *Helix beatrix*.
Figs. 6, 7. *Helix ramsdeni*.
Figs. 8, 9. *Helix moresbyi*.

Figs. 10, 11, 12 *Helix rhoda*.
Figs. 13, 14. *Helix angasiana*.
Figs. 15, 16. *Helix bitæniata*.

3. Notes on some of the Blue Crows of America. By P. L. SLATER, M.A., Ph.D., F.R.S., and OSBERT SALVIN, M.A., F.R.S.

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The typical Crows (*Corvus*) are, as is well known to naturalists, in the New World essentially a northern form, and have only penetrated into the Neotropical Region as far south as the highlands of Guatemala and the northern Antilles. Several genera of Blue Crows take their place in Central and Southern America. Of these, in our 'Nomenclator,' we enumerated 32 species as autoptically known to us. But during the past three years the receipt of additional specimens and examination of others in different collections has enabled us to add slightly to the number, and to make certain rectifications in our own list. These we beg leave to submit to the Society.

1. CYANOCITTA* ARGENTIGULA.

C. argentigula, Lawr. Ann. Lyc. N. Y. xi. p. 88 (1875).

Under this name Mr. Lawrence has recently described a Jay from Costa Rica with which we are not yet autoptically acquainted. It is apparently a well-defined species, belonging to the group containing

* The type of the genus *Cyanocitta* of Strickland is *Garrulus cristatus*, Linn., as stated in precise terms by the founder of the genus (Ann. Nat. Hist. xv. p. 261, 1845); and we therefore cannot understand why the authors of 'North American Birds' and other American writers persist in giving the type as *Garrulus*

C. nana and *C. pumilo*, and partakes to some extent of the character of both, in having the crescentic white frontal and superciliary marks of the latter, and the throat coloured as in the former species. It is probably the representative in Costa Rica of the Guatemalan *C. pumilio* and the Mexican *C. nana*.

2. CYANOCITTA BEECHEII (Vig.): Sel. et Salv. Nomencl. p. 39.

There are three somewhat similar species of *Cyanocitta* of a uniform black below, two only of which are inserted in the list in our 'Nomenclator' under the names *C. beecheyi* and *C. crassirostris*. These three birds may be readily distinguished as follows:—

- a. Frontis crista tenui elongata nigra..... 1. *sanblasiana*.
- b. Frontis plumis brevibus erectis, crista nulla.
 - a'. Major: dorso late cæruleo, naribus plumis frontalibus omnino tectis 2. *beecheyi*.
 - b'. Minor: dorso viridi-cyaneo, naribus plumis frontalibus dimidio tectis 3. *germana*.

The synonymy of these species should stand as follows.—

CYANOCITTA SANBLASIANA.

Geai de San Blas, Néboux, Rev. Zool. 1840, pp. 290, 323.

Pica sanblasiana, Lafr. Mag. de Zool. 1842, Ois. t. 28.

Cyanocorax de San-Blas, Prév et Desmurs, Voy. 'Vénus,' v. p. 200.

Cissilopha sanblasiana, Bp. Consp. i. p. 380; Lawrence, Mem.

Boston Soc. N. H. ii. p. 284.

"*Cyanurus geoffroyi*, Bp." Gray, Hand-list, ii. p. 4, et in Mus. Brit.

Hab. Western Mexico: San Blas (*Néboux*); Acapulco (*Leclancher*); Plains of Colima, Manzanilla Bay and Las Trochas (*Xantus*).

Mus. S.G., Acad. Philad., Brit.

Except as regards its thin frontal crest, this bird does not differ materially in form from its allies; and we see no reason for making a genus of it, as proposed by Bonaparte. The species is rare in European collections. Messrs. Salvin and Godman's specimen is one of Xantus's collection from the plains of Colima, and was presented to them by the Smithsonian Institution. There is a single mounted example in the Gallery of the British Museum, marked *C. geoffroyi*. In the Jardin des Plantes there is also one mounted specimen of this species.

It should be noticed that the figure of this bird in the 'Magasin de Zoologie' gives the bill yellow, showing that in this species, as in its two allies, this is a variable character, probably depending on sex.

californicus. Again, the type of *Cyanurus*, Sw., is not *Garrulus cristatus*, as given in the above mentioned work, p. 271. This error was caused by Mr. G. R. Gray's unauthorized assumption that the *first* species in any author's list must necessarily be his type. But Swainson himself tells us that the first three species which he mentions (i.e. *C. cristatus*, *C. stelleri*, and *C. sordidus*) are "aberrant," and that the "typical" species are only found in the "tropics of America and India." It is obvious therefore that *Cyanurus*, Sw. (1831) = *Cyanocorax*, Boie (1826), as stated by Strickland l. s. c., and that *Cyanocitta* is the proper generic name for the "Blue Jays" of America, as used by us in our "Nomenclator."

CYANOCITTA BEECHEII.

Pica beechei, Vig. Zool. Journ. iv. p. 353 (1829), et Beechey's Voy. Zool. p. 22, pl. 6.

Cyanocitta crassirostris, Bp. Consp. i. p. 378 (1850).

Cyanocorax geoffroyi, Bp. C. R. xxxi. p. 564 (1850).

Cyanocorax beecheyi, Finsch, Abh. Nat. Ver. Bremen, vol. ii. p. 333.

Cyanocitta beecheyi, Lawr. Mem. Boston Soc. N. . ii. p. 283.

Hab. North-western Mexico; Mazatlan (*Grayson and Bischoff*); Tres Marias Islands (*Xantus*).

As far as can be told by the imperfect diagnoses in Bonaparte's 'Conspectus,' his "*C. beachii*" is founded on a yellow-billed specimen of the next species, and his *C. crassirostris* on a black-billed specimen of the present bird. Grayson says decidedly that the colour of the bill in the present bird is a sexual character; and there is not much doubt that he is correct. Bonaparte's *C. geoffroyi* is also undoubtedly based upon an individual of this species.

There is no example of the true *C. beechei* in the British Museum. In the Galerie of the Jardin des Plantes there are four, all labelled "*Cyanocitta geoffroyi*, Bp." Two of these are from the Voyage of the 'Vénus,' from San Blas and Mazatlan respectively, that from San Blas being doubtless Bonaparte's type.

CYANOCITTA GERMANA, sp. nov.

Cyanocitta beachii, Bp. Consp. i. p. 378. (nec. Vig.).

Corvus (Pica) beechei, Eyd. et Gerv. Mag. de Zool. 1836, pl. 72, et Voy. 'Favorite,' pl. 20.

Cyanocitta crassirostris, Salv. Ibis, 1861, p. 353; Moore, P. Z. S. 1859, p. 57; Lawrence, Ann. L. N. Y. ix. p. 201.

Cyanurus beechei et *C. crassirostris*, Gray, Hand-list, ii. pp. 4 & 5.

Hab. Belize (*Salvin, Dyson & Leylan*); Peten (*Morelet*); Merida, Yucatan (*Schott*).

We have already stated that this bird is probably the *C. beachii* of Bonaparte's 'Conspectus.' Dr. Pucheran first pointed out the difference between the figure of Eydoux and Gervais in the 'Magasin de Zool.' (which we suppose to be also intended for it) and that of Vigors representing the true *beechei*, and associated the former with Morelet's specimens from Yucatan.

Not having looked sufficiently deeply into the complicated errors of previous workers, we have hitherto used the term *crassirostris* for the present bird, and have been followed therein by other writers. But, as hinted by Pucheran*, there can be little question that the insufficient diagnosis of Bonaparte's *C. crassirostris* was really taken from a black-billed *C. beechei*.

As in *C. beechei*, both yellow and black-billed specimens occur in the present species. Of two examples obtained by Salvin at Belize, one has a black bill and the other a yellow. The latter, moreover, has slight white tips to the lateral rectrices, which we look upon as a

* Rev. Zool. 1858, p. 196.

characteristic of the female of this species. The *C. beecheii* of Gray's Hand-list is based upon three similar yellow-billed and white-tipped specimens, in the British Museum, two of which were obtained by Dyson in British Honduras.

In the Gallery of the Jardin des Plantes are two specimens of the bird. One of these, labelled "Mexique," has a yellow bill and white tips to the tail. The other is a partial albino, and has the black portions of the plumage, except the tibiae, white. It agrees with the short diagnosis given by Bonaparte of *Cyanocitta beachii*, jr. (Consp. p. 378), and is doubtless the bird from which it was taken. Amongst the skins at Paris is one example of this species from Merida (Yucatan), with yellow bill and white-tipped rectrices. This is marked in the handwriting of Jules Verreaux as the type of Bonaparte's *crassirostris*; but this is clearly an error. It is, no doubt, the specimen referred to by Pucheran (Rev. Zool. 1858, p. 196) as having been brought by Morelet from Guatemala.

CYANOCITTA JOLYÆA, Bp. Journ. f. Orn. 1853, p. 47; Tacz. P. Z. S. 1874, p. 524.

Of this rare bird we have never been able to procure specimens, but have examined that in the Paris Museum (probably Bonaparte's type) and convinced ourselves that it is an excellent species. There is likewise an example of it in the Copenhagen Museum, obtained by Prof. Reinhardt when at Lima, along with the specimen of *Iridornis reinhardti* (Ibis, 1865, p. 495, pl. xi.). We have not seen Taczanowski's specimens, but have little doubt that they really belong here, and that the bird is from the Junin district of Peru. Further south in the Cuzco district and in Bolivia *C. viridi-cyanea* takes its place*.

CYANOCITTA ARMILLATA, G. R. Gray.

The series of this bird in our collections present three recognizable forms, not including *C. turcosa*, Bp. These are from three different mountain-ranges of Columbia and Venezuela, namely the Andes of Merida, the central range of Bogota and Pamplona, and the Quindiu range, between the Cauca and Magdalena valleys. They may be distinguished as follows, but are hardly worthy of specific rank.

α. MERIDANA.

Cyanocitta armillata, Scl. et Salv. P. Z. S. 1870, p. 788.

In this form the whole upper surface is deep blue without any greenish tinge on the lower back and tail; the head is likewise barely lighter, not of a silvery blue as in No. 2. Below also the plumage is of a darker blue and quite uniformly coloured except on the throat, within the black neck-collar, where it is lighter, but not so bright as in the Bogota bird.

Of this form Goering obtained specimens in the upper wood-region of Merida, three of which are now before us.

* Cf. P. Z. S. 1873, p. 185.

β. BOGOTANA.

Cyanocitta armillata, G. R. Gray, in Gray & Mitch. Gen. of B. pl. lxxiv.; Wyatt, Ibis, 1871, p. 330.

This is the ordinary "Bogota" form, and is, we suppose, that figured by Gray and Mitchell, as above quoted; but no description is given. It is much nearer to the last than to the succeeding, having no greenish tinge to the blue. But the throat is lighter, the head paler, and the upper surface generally not quite so dark. Mr. Wyatt's skin from Pamplona belongs strictly to this form.

γ. QUINDIUNA.

Of this form Mr. T. K. Salmon has lately sent us many examples from the Cordillera of Quindiu. The forehead is of a more intense blue than in the Bogota bird; and this colour is continued over the head and shoulders. The lower back, wings, tail and belly below are of a more greenish blue; but the throat within the black collar is of nearly the same tint as in β.

P.S.—Since this paper was written we have received from Mr. Lawrence a separate copy of his paper entitled "Description of a new Species of Jay of the Genus *Cyanocitta*, and of a new Species of the Genus *Cyanocorax*," read October 11th of last year before the Lyceum of Natural History of New York. So far as we can tell from Mr. Lawrence's description, his *Cyanocitta pulchra*, from Ecuador, there described, is a species with which we are not acquainted. But the *Cyanocorax*, for which the name *C. orton*i is suggested (Ann. L. N. Y. xi. p. 166), is, in our opinion, none other than *Cyanocorax mystacalis*, Geoffr., of which name *C. uroleucus*, Heine, J. f. Orn. 1860, p. 115, is a synonym. Slater's collection contains a skin of this species from Loxa in Ecuador, which agrees in every respect with Mr. Lawrence's description of his supposed new bird. The association of *C. mystacalis* with *C. cayanus* (by Bonaparte and others) is a great error, as may be seen by reference to the original types of the former now in the Paris Museum and Philadelphia Academy, both of which we have inspected, or even to the sufficiently accurate figure in the 'Magasin de Zoologie.' Whether *C. bellus* of Schlegel is really referable to *C. mystacalis* (as suggested, Ibis, 1868, p. 111) is perhaps not quite certain; for, as pointed out by Mr. Lawrence, Schlegel describes the outer tail-feathers of his *C. bellus* as having their bases blue. An examination of the typical specimen will be necessary to decide this question; but it will, in our opinion, probably turn out to be the case that the assertion made in the 'Ibis' is correct.